Name: _____

Date: _____

Period: _____

Geometry Cumulative Study Guide

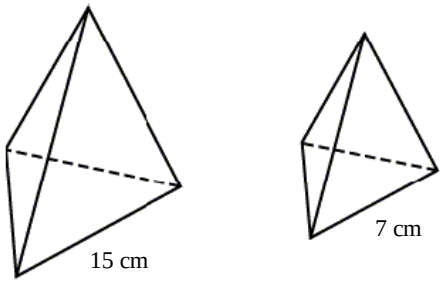
Test 21

Numeric Response

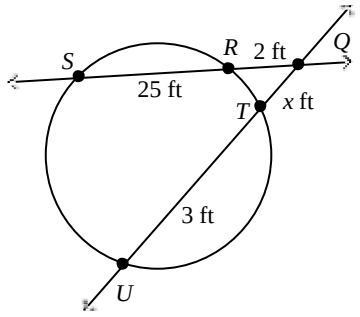
1. What is the volume, in cubic units, of a right cone with a radius of 7 and a height of 14? Round your answer to the nearest tenth.

2. Find $\sin\theta$ if $\cos\theta = 0.34$. Round your answer to the nearest hundredth.

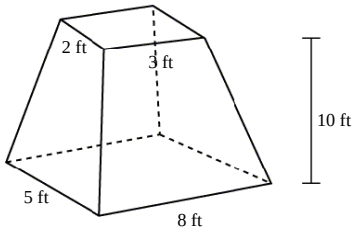
3. The two pyramids shown are similar. The surface area of the smaller pyramid is 98 square centimeters. What is the surface area, in square centimeters, of the larger pyramid? Round your answer to the nearest tenth if necessary.



4. Determine the value of *x* in the diagram below.



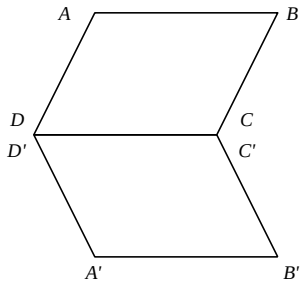
5. Find the volume, in cubic feet, of the frustum of the pyramid shown below. Round your answer to the nearest hundredth.



Problem

6. A regular hexagon has a side length of 50 cm. What is the area of the hexagon?

7. Identify the type of transformation illustrated below.



8. Solve the system of equations below algebraically.

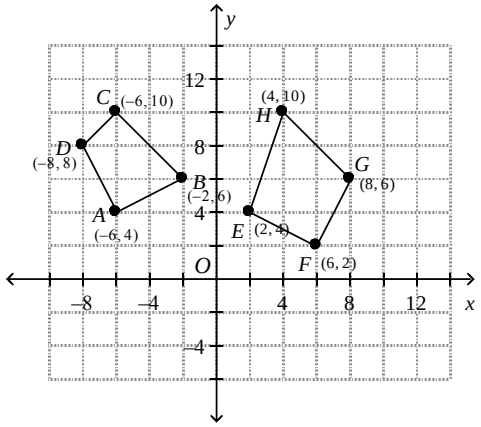
$$y = \frac{1}{2}x - 11$$

$$y = -\frac{5}{2}x - 5$$

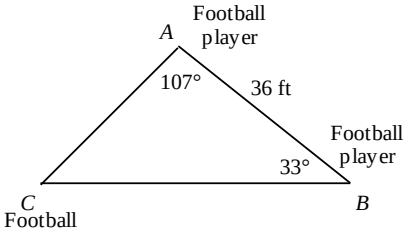
9. In $\odot A$, chords $\overline{VW}$ and $\overline{XY}$ intersect at *Z*. Suppose $VZ = 4$, $WZ = n$, $XZ = 4 - n$, and $YZ = 4$. Write and solve an equation for *n*.

10. Solve the strict linear inequality $6x + y \leq 4$ for *y*.

11. Are the quadrilaterals shown below congruent?



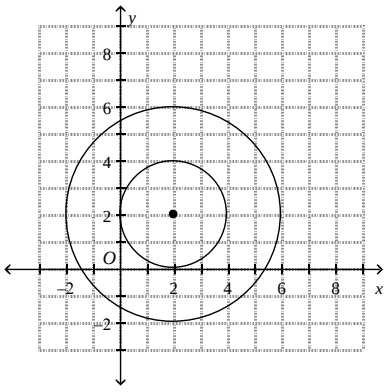
12. Two football players are 36 feet apart as shown in the diagram below. How far is each player from the football? Find the distance to the nearest foot.



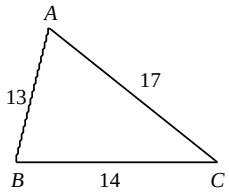
13. John lives 3.7 miles north and 3.7 miles west of a pizzeria that delivers for 5 miles in any direction. The pizzeria will be moving to a new location 3 miles to the south but will increase its delivery range by a factor of 1.3. From its original location, did the pizzeria deliver to John's house? From its new location, will the pizzeria deliver to John's house? Explain.

14. Triangle *XYZ* has a base that is congruent to its height. If the base is dilated by a factor of 5, what is the ratio of the new triangle's area to the original triangle's area?

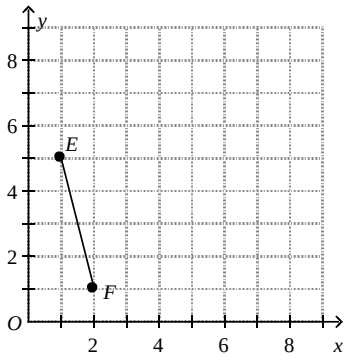
15. Write the equations for the concentric circles shown below. Describe how the equations are similar and how they are different.



16. Find the measure of $\angle C$ in the triangle below. Round your answer to the nearest hundredth of a degree.

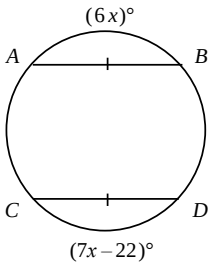


17. Write a point matrix for $\overline{EF}$. Add the point matrix to the matrix $\begin{bmatrix} 1 & 1 \\ 1 & 1 \end{bmatrix}$. Graph the line represented by the new matrix.



18. Determine the result of the dilation $D_{0,6}(x,y)$ on the points (2, 3) and (–4, –3).

19. Use the figure shown below and the given information to find the measure of each arc.



20. Evaluate $\begin{bmatrix} 3 & 2 \\ -1 & -5 \\ -2 & -3 \end{bmatrix} \times \begin{bmatrix} -1 & 0 & -4 \\ 1 & -5 & -5 \end{bmatrix}$.

ometry Cumulative Study Guide Test 21
swer Section

MERIC RESPONSE

1. ANS: 718.4

   PTS: 1 REF: Lesson 77: Finding Surface Areas and Volumes of Cones
   NAT: NCTM M.2b TOP: Cumulative Test 21
   MSC: Geom_S08_00065
2. ANS: 0.94

   PTS: 1 REF: Lesson 91: Introduction to Trigonometric Identities
   NAT: NCTM G.1d TOP: Cumulative Test 21
3. ANS: 450

   PTS: 1 REF: Lesson 99: Volume Ratios of Similar Solids
   NAT: NCTM G.1b TOP: Cumulative Test 21
4. ANS: 6

   PTS: 1 REF: Lesson 101: Determining Lengths of Segments Intersecting Circles
   NAT: NCTM G.1d TOP: Cumulative Test 21
5. ANS: 204.97

   PTS: 1 REF: Lesson 103: Frustums of Cones and Pyramids
   NAT: NCTM M.2b TOP: Cumulative Test 21
   MSC: Geom_S11_00035

OBLEM

6. ANS:
   $3750\sqrt{3}$ square centimeters

   PTS: 1 REF: Lesson 66: Finding Perimeters and Areas of Regular Polygons
   NAT: NCTM M.2b TOP: Cumulative Test 21
   MSC: Geom_S07_00090
7. ANS:
   Parallelogram *ABCD* is reflected across side *CD*.

   PTS: 1 REF: Lesson 67: Introduction to Transformations
   NAT: NCTM G.3b TOP: Cumulative Test 21
8. ANS:
   (2, –10)

   PTS: 1 REF: Lesson 81: Graphing and Solving Linear Systems
   NAT: NCTM A.2b TOP: Cumulative Test 21
9. ANS:
   $4n = 4(4 - n); n = 2$

   PTS: 1 REF: Lesson 86: Determining Chord Length
   NAT: NCTM G.1d TOP: Cumulative Test 21
10. ANS:
    $y \leq -6x + 4$
    MSC: Geom_S10_00038

    PTS: 1 REF: Lesson 88: Graphing and Solving Linear Inequalities
    NAT: NCTM A.2b TOP: Cumulative Test 21
11. ANS:
    MSC: Geom_S10_00046
    No, *ABCD* is not congruent to *EFGH*.

    PTS: 1 REF: Lesson 92: Quadrilaterals on the Coordinate Plane
    NAT: NCTM G.2a TOP: Cumulative Test 21
    MSC: Geom_S11_00033
12. ANS:
    The football player at $\angle A$ is approximately 31 feet from the football. The football player at $\angle B$ is approximately 54 feet from the football.

    PTS: 1 REF: Lesson 94: Law of Sines
    TOP: Cumulative Test 21 MSC: Geom_S10_00058
13. ANS:
    No, John lived approximately 5.23 miles from the original pizzeria location; no, the new delivery area is 6.5 miles in any direction and John lives approximately 7.65 miles from the new location.

    PTS: 1 REF: Lesson 95: Equations of Circles: Translating and Dilating
    NAT: NCTM G.3a TOP: Cumulative Test 21
14. ANS:
    The ratio of the triangles' areas is 5 : 1.

    PTS: 1 REF: Lesson 96: Effects of Changing Dimensions on Perimeter and Area
    NAT: NCTM G.3a TOP: Cumulative Test 21

15. ANS:
$(x-2)^2+(y-2)^2=4$

$(x-2)^2+(y-2)^2=16$

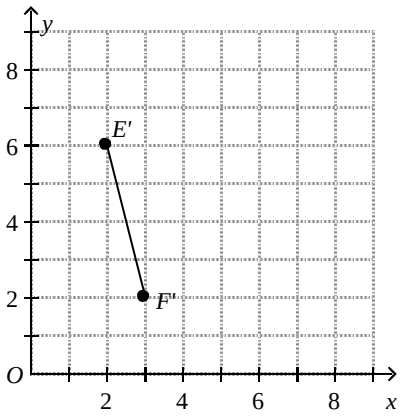
The circles are coplanar and they share the same center. They have different radii. The larger circle is the smaller circle dilated by a factor of 2.

PTS: 1 REF: Lesson 97: Concentric Circles NAT: NCTM G.2a
TOP: Cumulative Test 21 MSC: Geom_S10_00068

16. ANS:
$m\angle C \approx 48.4°$

PTS: 1 REF: Lesson 98: Law of Cosines NAT: NCTM G.1d
TOP: Cumulative Test 21 MSC: Geom_S10_00070

17. ANS:
$\begin{bmatrix} 1 & 2 \\ 5 & 1 \end{bmatrix}; \begin{bmatrix} 2 & 3 \\ 6 & 2 \end{bmatrix};$



PTS: 1 REF: Lesson 100: Transformation Matrices
NAT: NCTM G.4d TOP: Cumulative Test 21 MSC: Geom_S10_00072

18. ANS:
(12, 18) and (–24, –18)

PTS: 1 REF: Lesson 102: Dilations in the Coordinate Plane
NAT: NCTM G.3a TOP: Cumulative Test 21 MSC: Geom_S11_00045

19. ANS:
$x = 22; m\overset{\frown}{AB} = 132°; m\overset{\frown}{CD} = 132°$

PTS: 1 REF: Lesson 104: Relating Arc Lengths and Chords
NAT: NCTM G.1d TOP: Cumulative Test 21

20. ANS:
$\begin{bmatrix} -1 & -10 & -22 \\ -4 & 25 & 29 \\ -1 & 15 & 23 \end{bmatrix}$

PTS: 1 REF: Lesson 105: Rotations and Reflections in the Coordinate Plane
NAT: NCTM G.4d TOP: Cumulative Test 21